Chapter 4. Who is most at risk of HIV infection?

Chapter description

Chapter 4 presents profiles of Massachusetts populations most at risk of HIV infection. The first is a profile of HIV diagnoses (among both HIV-infected (non-AIDS) and AIDS cases) before 1999 and from 1999-2002. Data are aggregated prior to 1999 to provide a baseline for comparison to the years since diagnosis of HIV infection became reportable in Massachusetts, 1999-2002. This profile represents the most current available indicator of the direction of the epidemic and provides data to inform prevention initiatives so they can stay ahead of the epidemic curve and minimize the spread of new infections. Data describing individuals with recent HIV diagnoses provide useful information for planning and targeting HIV prevention programs. In addition, data describing people living with HIV/AIDS is important for planning prevention programs for HIV-positive people (See Chapter 2. Who is currently living with HIV/AIDS?).

Background on HIV reporting system

On January 1, 1999 the Massachusetts Department of Public Health (MDPH) started requiring clinical providers to submit case report forms with demographic and risk information about individuals diagnosed with HIV infection, as they had been doing for AIDS since 1981. All previous and existing cases of HIV infection through 1998 also were to be reported by the end of 1999. These cases are labeled “pre-1999” in the following analyses. New as well as previously diagnosed HIV infections continue to be reported. When comparing pre-1999 HIV diagnoses to HIV diagnoses from 1999-2002, one should factor in the differences in HIV reporting requirements for these two time periods. Since HIV diagnoses were not reported at the time of diagnosis prior to 1999 and clinical providers were given a relatively short time frame within which to report all prevalent HIV cases, the pre-1999 data are considered less complete than data reported after 1999. Additionally, pre-1999 HIV diagnoses do not include people who were diagnosed with HIV infection and died before 1999 without being reported with AIDS, nor do they include individuals who were no longer receiving HIV-related health care in Massachusetts at the point when HIV (non-AIDS) reporting became mandatory.

Caveats of the data

While trends in HIV diagnosis are our best indicator for those who are most at risk of HIV infection, HIV surveillance reflects the incidence of diagnoses among people who are in care and not the actual incidence of new infections. Like AIDS diagnoses, HIV diagnoses are not a direct measure of incidence of infection itself. People may be living with HIV for many years prior to being tested and seeking care, at which point the case is considered a “diagnosis” and reported to the MDPH HIV/AIDS Surveillance Program. Furthermore, as with early data for AIDS cases, the data from the first few years of a new reporting system can be unstable, and caution should be used in interpretation. During the time a data reporting system is in its infancy, there is a greater likelihood that

fluctuations in data are attributable to reporting patterns and clinician education efforts rather than actual changes in disease incidence.

Additionally, one must consider the effects of reporting lag when reviewing the preliminary 2002 HIV infection diagnoses. Although Massachusetts regulations require providers to submit HIV case reports in a timely fashion, many 2002 HIV diagnoses will be reported to the surveillance program after the release of this Epidemiologic Profile. While reliable estimates are not yet available for the reporting lag of HIV diagnoses, 42% of AIDS diagnoses from 1992-2001 were reported more than 6 months after diagnosis. If one assumes that the reporting lag of HIV diagnoses is similar to that of AIDS diagnoses, it suggests that the 2002 HIV data presented in this report may represent a substantial undercount. Therefore, although the data that follow report a decline in the number of HIV diagnoses in the past three years, it is likely that the true incidence of HIV diagnosis has reached a plateau or perhaps experienced an increase. Preliminary analyses suggest that the distribution of HIV diagnoses by race/ethnicity, gender and exposure mode for cases reported more than 6 months after diagnosis is not substantially different than the distribution of HIV cases reported within 6 months.

Section 1. Profile of People Diagnosed with HIV Infection before 1999, in 1999, 2000, 2001 and 2002

Table 4.1 People Diagnosed with HIV Infection by Gender and Year of Diagnosis: MA, Before 1999, 1999 - 2002[1]

	Male		Female		
	N	%	N	%	Total
< 1999	15,555	77%	4,553	23%	**20,108**
1999	894	69%	397	31%	**1,291**
2000	774	70%	325	30%	**1,099**
2001	653	70%	282	30%	**935**
2002[2]	*620*	*69%*	*284*	*31%*	***904***

[1] Reflects year of HIV diagnosis among all individuals reported with HIV infection, with or without an AIDS diagnosis
[2] 2002 Data are preliminary
Data Source: MDPH HIV/AIDS Surveillance Program (percentages may not add up to 100% due to rounding), Data as of 7/1/03

- Of all people diagnosed with HIV/AIDS and reported in Massachusetts, 20,108 were diagnosed with HIV infection before 1999, 1,291 were diagnosed with HIV infection in 1999, 1,099 in 2000, 935 in 2001, and 904 in 2002. (Note: 2002 data are considered preliminary)
- From 1999 – 2002, the distribution of people diagnosed with HIV infection across gender has remained steady at 69% - 70% male and 30% - 31% female.

Table 4.2 People Diagnosed with HIV Infection by Race/Ethnicity and Year of Diagnosis: MA, Before 1999, 1999-2002[1]

	White NH		Black NH		Hispanic		API		AI/AN		Total[2]
	N	%	N	%	N	%	N	%	N	%	
< 1999	11,166	56%	4,690	23%	4,086	20%	96	<1%	24	<1%	**20,108**
1999	544	42%	384	30%	326	25%	20	2%	3	<1%	**1,291**
2000	430	39%	373	34%	263	24%	25	2%	2	<1%	**1,099**
2001	383	41%	306	33%	214	23%	27	3%	2	<1%	**935**
2002[3]	*356*	*39%*	*306*	*34%*	*207*	*23%*	*20*	*2%*	*1*	*<1%*	***904***

[1] Reflects year of HIV diagnosis among all individuals reported with HIV infection, with or without an AIDS diagnosis
[2] Totals include people with unspecified race/ethnicity
[3] 2002 Data are preliminary
NH = Non-Hispanic, API = Asian/Pacific Islander, AI/AN = American Indian/Alaskan Native
Data Source: MDPH HIV/AIDS Surveillance Program (percentages may not add up to 100% due to rounding), Data as of 7/1/03

- Compared to people diagnosed with HIV infection before 1999, Blacks and Hispanics represent a larger proportion of reported cases among people diagnosed from 1999-2002.
- From 1999 – 2002, the distribution of HIV infection across race/ethnicity has remained fairly stable.

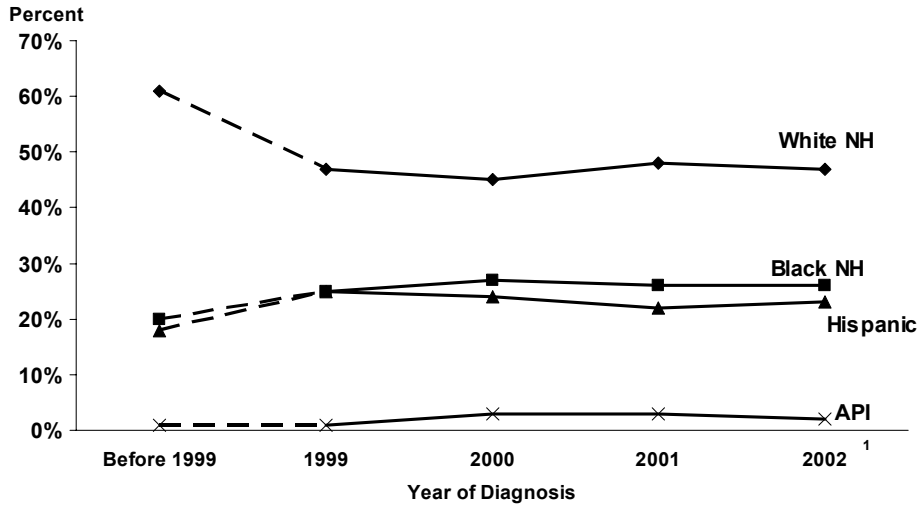
Table 4.3 People Diagnosed with HIV Infection by Place of Birth and Year of Diagnosis: MA, Before 1999, 1999 – 2002[1]

	US		US Dependency		Non-US		
	N	%	N	%	N	%	Total
< 1999	15,679	78%	2,380	12%	2,049	10%	**20,108**
1999	891	69%	166	13%	234	18%	**1,291**
2000	705	64%	120	11%	274	25%	**1,099**
2001	590	63%	98	10%	247	26%	**935**
2002[2]	*535*	*59%*	*82*	*9%*	*287*	*32%*	***904***

[1] Reflects year of HIV diagnosis among all individuals reported with HIV infection, with or without an AIDS diagnosis
[2] 2002 Data are preliminary
Data Source: MDPH HIV/AIDS Surveillance Program (percentages may not add up to 100% due to rounding), Data as of 7/1/03

- From 1999 to 2002, the proportion of people with diagnosed HIV infection born outside the US and its dependencies increased from 18% to 32%, while the proportion of HIV diagnoses to people born in the US decreased from 69% to 59%, for people born in US dependencies, the proportion decreased from 13% to 9%.

Figure 4.1 Percentage Distribution of *Men* Diagnosed with HIV Infection by Race/Ethnicity and Year of Diagnosis: MA, Before 1999, 1999-*2002*[1]

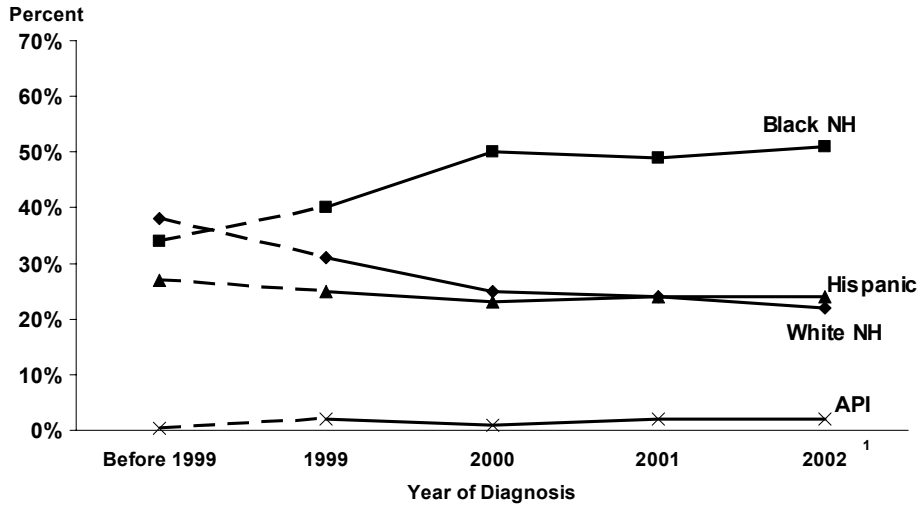


NH= Non-Hispanic, API = Asian/Pacific Islander, Note: a dashed line is used to distinguish between pre-1999 data (which is an aggregate of multiple years) and annual data for subsequent years. 1 2002 Data are preliminary; Data Source: MDPH HIV/AIDS Surveillance Program; Data as of 7/1/03

- Compared to men diagnosed with HIV infection before 1999, Black and Hispanic men represent a larger proportion of reported cases during 1999-2002.
- From 1999 – 2002, the distribution of HIV infection across race/ethnicity has remained fairly stable.

See Table A.10 in Appendix 1 for further detail.

Figure 4.2 Percentage Distribution of *Women* Diagnosed with HIV Infection by Race/Ethnicity and Year of Diagnosis: MA, Before 1999, 1999-*2002*[1]



NH= Non-Hispanic, API= Asian/Pacific Islander, Note: a dashed line is used to distinguish between pre-1999 data (which is an aggregate of multiple years) and annual data for subsequent years. 1 2002 Data are preliminary; Data Source: MDPH HIV/AIDS Surveillance Program; Data as of 7/1/03

- The proportion of females diagnosed with HIV infection that were Black increased from 40% in 1999 to 51% in 2002.

See Table A.11 in Appendix 1 for further detail.

Table 4.4 People Diagnosed with HIV Infection by Exposure Mode[1] and Year of Diagnosis: MA, Before 1999, 1999- 2002[2]

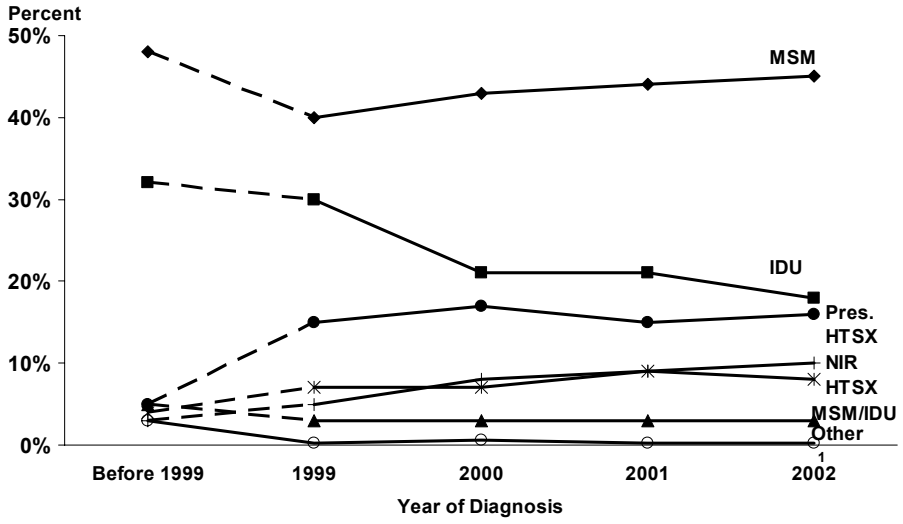
	MSM		IDU		MSM/ IDU		HTSX		Pres. HTSX		NIR		Total[3]
	N	%	N	%	N	%	N	%	N	%	N	%	
<1999	7,530	37%	7,095	35%	815	4%	2,024	10%	1,364	7%	658	3%	**20,108**
1999	361	28%	381	30%	27	2%	191	15%	266	21%	60	5%	**1,291**
2000	331	30%	237	22%	21	2%	174	16%	257	23%	72	7%	**1,099**
2001	285	30%	188	20%	18	2%	138	15%	211	23%	90	10%	**935**
2002[4]	*277*	*31%*	*152*	*17%*	*18*	*2%*	*134*	*15%*	*215*	*24%*	*106*	*12%*	***904***

[1] See the Glossary for and explanation of Exposure Mode categories
[2] Reflects year of HIV diagnosis among all individuals reported with HIV infection, with or without an AIDS diagnosis
[3] Totals include Blood/Blood Products, Occupational, and Pediatric exposure modes
[4] 2002 Data are preliminary
MSM = male-to-male sex; IDU = injection drug use; MSM/IDU = male-to-male sex and injection drug use; HTSX = heterosexual sex; Pres. HTSX = presumed heterosexual; NIR = No Identified Risk
Data Source: MDPH HIV/AIDS Surveillance Program (percentages may not add up to 100% due to rounding), Data as of 7/1/03

- From 1999 to 2002, the proportion of HIV diagnoses with male-to-male sex as the reported exposure mode increased from 28% to 31%, while the proportion with injection drug use decreased from 30% to 17%.
- In 2000, the number of HIV diagnoses with presumed heterosexual as the exposure mode surpassed the number of diagnoses with injection drug use, and this trend continues in 2002.

Note: For interpretation of the category "presumed heterosexual," see note on page 17.

Figure 4.3 Percentage Distribution of *Men* Diagnosed with HIV Infection by Exposure Mode and Year of Diagnosis: MA, Before 1999, 1999-*2002*[1]

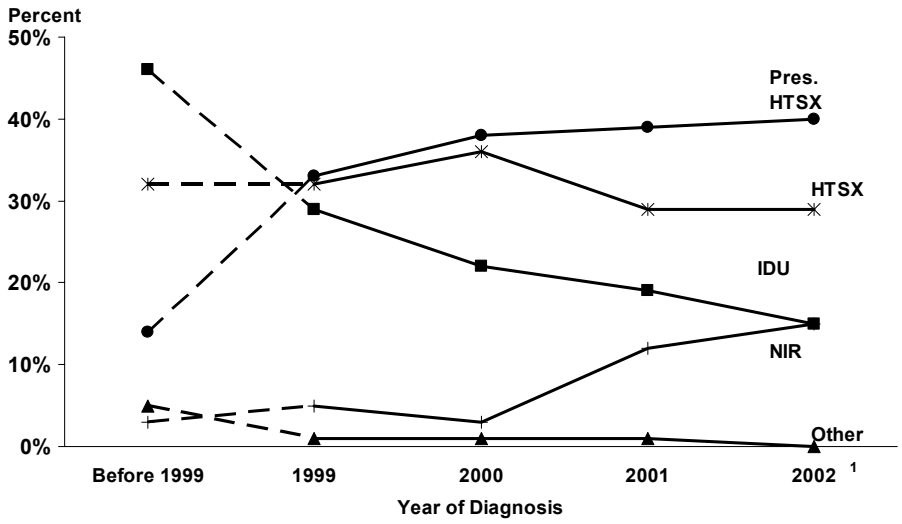


Note: a dashed line is used to distinguish between pre-1999 data (which is an aggregate of multiple years) and annual data for subsequent years. 1 2002 Data are preliminary; Data Source: MDPH HIV/AIDS Surveillance Program; Data as of 7/1/03

- For males, male-to-male sex (MSM) accounts for the largest proportion of reported exposures before 1999 and from 1999 – 2002.
- In 2002, injection drug use (IDU) accounted for a smaller percentage (18%) of HIV diagnoses among males than in earlier years.

See Table A.12 in Appendix 1 for further detail.

Figure 4.4 Percentage Distribution of *Women* Diagnosed with HIV Infection by Exposure Mode and Year of Diagnosis: MA, Before 1999, 1999-*2002*[1]



Note: a dashed line is used to distinguish between pre-1999 data (which is an aggregate of multiple years) and annual data for subsequent years. 1 2002 Data are preliminary; Data Source: MDPH HIV/AIDS Surveillance Program; Data as of 7/1/03

- From 1999 – 2002, the proportion of HIV diagnoses among women where the mode of exposure is presumed heterosexual sex increased from 33% to 40%.
- The proportion of HIV exposures among women attributed to injection drug use (15%) is less in 2002 than in prior years.

Note: For interpretation of the category "presumed heterosexual," see note on page 17.

See Table A.13 in Appendix 1 for further detail.

(Note: Caution should be used in interpreting large increases or decreases from one year to the next. Reporting artifacts, such as underreporting of cases in certain risk categories, may account for these differences, particularly in more recent years.)

Table 4.5 People Diagnosed with HIV Infection by Age at Diagnosis: MA, 1999-2002[1]

	<1999		1999		2000		2001		*2002[2]*	
Age in years	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	***N***	***%***
Under 13[3]	229	1%	3	0%	0	0%	2	0%	*1*	*<1%*
13 to 19	249	1%	19	1%	25	2%	14	1%	*16*	*2%*
20 to 24	1,331	7%	60	5%	60	5%	45	5%	*63*	*7%*
25 to 29	3,553	18%	139	11%	136	12%	98	10%	*111*	*12%*
30 to 34	5,049	25%	281	22%	196	18%	185	20%	*155*	*17%*
35 to 39	4,355	22%	305	24%	271	25%	218	23%	*192*	*21%*
40 to 44	2,775	14%	230	18%	183	17%	163	17%	*163*	*18%*
45 to 49	1,360	7%	135	10%	105	10%	121	13%	*96*	*11%*
50+	1,207	6%	119	9%	123	11%	89	10%	*107*	*12%*
Total	**20,108**	**100%**	**1,291**	**100%**	**1,099**	**100%**	**935**	**100%**	***904***	***100%***

[1] Reflects year of HIV diagnosis among all individuals reported with HIV infection, with or without an AIDS diagnosis
[2] 2002 Data are preliminary
[3] Includes AIDS cases diagnosed under age 13 years only, data on cases of HIV (non-AIDS) diagnosed under age 13 years are not included here. For more information contact the Pediatric Spectrum of Disease Project, MDPH Bureau of Communicable Disease Control.
Data Source: MDPH HIV/AIDS Surveillance Program (percentages may not add up to 100% due to rounding), Data as of 7/1/03

- The proportion of people diagnosed with HIV infection as adolescents (age 13-24 years) increased from 6% in 1999 to 9% in 2002.
- The proportion of people diagnosed with HIV infection at age 50 years or above increased from 9% in 1999 to 12% in 2002.

See Tables A.14 and A.15 in Appendix 1 for further detail by gender.

Table 4.6 People Diagnosed with HIV Infection by Health Service Region (HSR)[1]: MA, 1999-2002[2]

	<1999		1999		2000		2001		*2002*[3]	
HSR	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	***N***	***%***
Boston	7,009	35%	365	28%	355	32%	289	31%	*321*	*36%*
Central	1,729	9%	90	7%	78	7%	60	6%	*80*	*9%*
Metrowest	2,477	12%	153	12%	141	13%	107	11%	*120*	*13%*
Northeast	2,706	13%	184	14%	144	13%	147	16%	*137*	*15%*
Southeast	2,829	14%	184	14%	161	15%	157	17%	*124*	*14%*
Western	2,285	11%	187	14%	147	13%	128	14%	*83*	*9%*
Prisons[4]	1,064	5%	127	10%	73	7%	47	5%	*39*	*4%*
Total[5]	**20,108**	**100%**	**1,291**	**100%**	**1,099**	**100%**	**935**	**100%**	***904***	***100%***

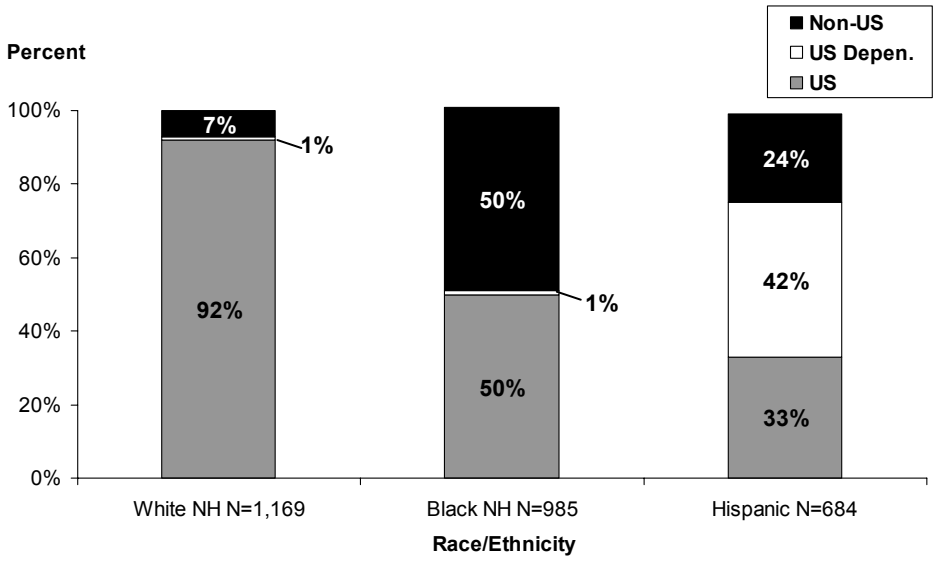
[1] Reflects the health service region of a person's residence at the time of report (not necessarily current residence)
[2] Reflects year of HIV diagnosis among all individuals reported with HIV infection, with or without an AIDS diagnosis
[3] 2002 data are preliminary
[4] HSRs are regions defined geographically to facilitate targeted health service planning. While prisons are not an HSR, the prison population is presented separately in this analysis because of its unique service planning needs. Prisons include persons who were diagnosed with HIV/AIDS while in a correctional facility;
[5] Totals include 10 people of unknown HSR
Data Source: MDPH HIV/AIDS Surveillance Program (percentages may not add up to 100% due to rounding), Data as of 7/1/03

- Across Health Service Regions of residence, the Boston HSR was the residence of the largest proportion of people at the time of diagnosis with HIV infection both before 1999 and from 1999-2002.

See Appendix 4 for Map of HSRs.

Section 2: People Diagnosed with HIV Infection from 2000-2002

Figure 4.5 People Diagnosed with HIV Infection Within the Years 2000 - 2002 by Race/Ethnicity and Place of Birth: MA



NH=Non-Hispanic; Data Source: MDPH HIV/AIDS Surveillance Program, Data as of 7/1/03

- Place of birth among people diagnosed with HIV infection within the three year period 2000 – 2002 varies by race/ethnicity.
- Ninety-two percent of Whites diagnosed with HIV within the three year period 2000 – 2002, were born in the US compared to 50% of Blacks and 33% of Hispanics.
- Forty-two percent of Hispanics diagnosed with HIV within the three year period 2000 – 2002, were born in a US Dependency (mainly Puerto Rico) compared to 1% of both Blacks and Whites.
- Fifty percent of Blacks diagnosed with HIV within the three year period 2000 – 2002, were born outside the US compared to 24% of Hispanics and 7% of Whites.
- The majority of non-US born Blacks diagnosed with HIV within the three year period 2000 – 2002 come from Sub Saharan Africa and the Caribbean while the majority of non-US born Hispanics come from Central and South America and the majority of non-US born Whites come from Central and South America aw well as North America and Europe.

See Table A.9 in Appendix 1 for further detail.

Table 4.7 People Diagnosed with HIV Infection by Race/Ethnicity and Exposure Mode: MA, 2000-2002[1]

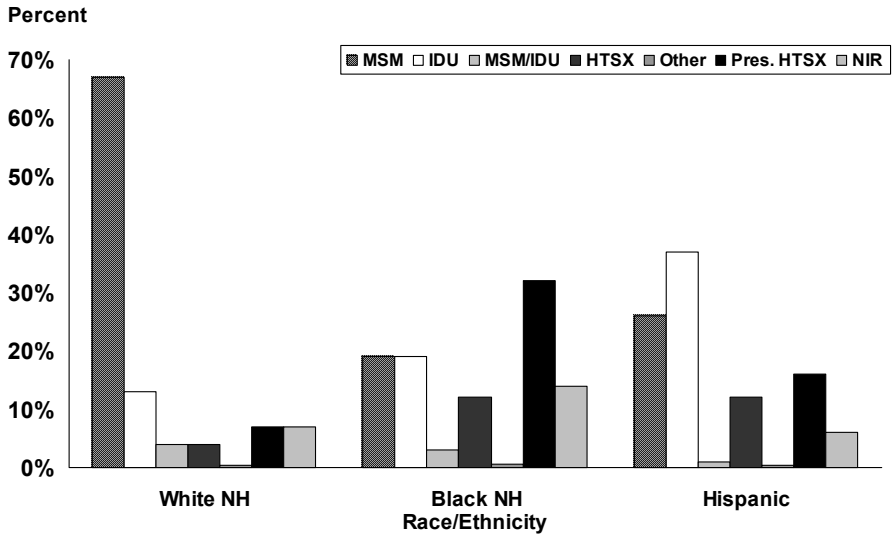
	White NH		Black NH		Hispanic		API		AI/AN	
Exposure Mode[2]:	N	%	N	%	N	%	N	%	N	%
MSM	638	55%	103	10%	124	18%	20	28%	--[3]	--[3]
IDU	201	17%	145	15%	222	32%	--[3]	--[3]	--[3]	--[3]
MSM/IDU	34	3%	15	2%	7	1%	--[3]	--[3]	--[3]	--[3]
HTSX	92	8%	192	19%	143	21%	13	18%	--[3]	--[3]
Other	6	1%	6	1%	2	<1%	0	0%	--[3]	--[3]
P. HTSX	112	10%	408	41%	139	20%	21	29%	--[3]	--[3]
NIR	86	7%	116	12%	47	7%	15	21%	0	0%
Total	**1,169**	**100%**	**985**	**100%**	**684**	**100%**	**72**	**100%**	**5**	**100%**

[1] Reflects year of HIV diagnosis among all individuals reported with HIV infection, with or without an AIDS diagnosis;
[2] See the Glossary for an explanation of exposure mode categories
[3] Percentages calculated from a numerator of less than 5 and a denominator of less than 100 are not presented;
NH = Non-Hispanic, API = Asian/Pacific Islander, AI/AN = American Indian/Alaska Native, MSM = Male-to-male sex, IDU = Injection Drug Use, HTSX = Heterosexual Sex, P. HTSX = Presumed Heterosexual Sex, NIR = No Identified Risk
Data Source: MDPH HIV/AIDS Surveillance Program (percentages may not add up to 100% due to rounding), Data as of 7/1/03

- Exposure mode among people diagnosed with HIV infection within the three year period 2000 – 2002 varies by race/ethnicity.
- Among Whites diagnosed with HIV within the three year period 2000 – 2002, male-to-male sex is the primary reported risk for HIV infection, attributed to 55% of exposures.
- Among Blacks diagnosed with HIV within the three year period 2000 – 2002, presumed heterosexual sex is the primary reported risk for HIV infection, attributed to 41% of exposures.
- Injection drug use is the leading reported risk for HIV infection among Hispanics within 2000-2002, attributed to 32% of exposures.
- Male-to-male sex and presumed heterosexual sex account for 28% and 29%, respectively, of reported risk among Asian/Pacific Islanders diagnosed with HIV infection within the three year period 2000 – 2002. (Caution should be used in interpreting the data for Asian/Pacific Islanders because the total number of cases (N=68) is small).

Note: For interpretation of the category "presumed heterosexual," see note on page 17.

Figure 4.6 *Men* Diagnosed with HIV Infection Within the Years 2000 - 2002 by Exposure Mode and Race/Ethnicity: MA



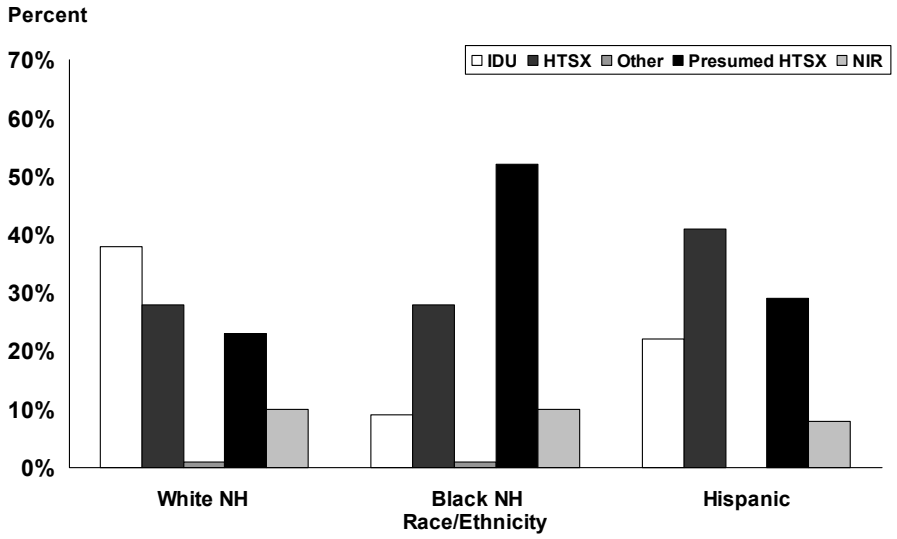
NH= Non-Hispanic, Data Source: MDPH HIV/AIDS Surveillance Program, Data as of 7/1/03

- Exposure mode among males diagnosed with HIV infection within the three year period 2000 – 2002 varies by race/ethnicity.
  - Among White males, male-to-male sex is the primary reported risk for HIV infection, attributed to 67% of exposures.
  - Among Black males, exposure mode is more evenly distributed with presumed heterosexual sex accounting for 32% of exposures, and injection drug use and male-to-male sex each accounting for 19%.
  - Among Hispanic males, injection drug use is the leading reported risk for HIV infection, accounting for 37% of exposures.

  See Table A.18 in Appendix 1 for further detail

Note: For interpretation of the category "presumed heterosexual," see note on page 17.

Figure 4.7 *Women* Diagnosed with HIV Infection Within the Years 2000 - 2002 by Exposure Mode and Race/Ethnicity: MA



NH= Non-Hispanic, Data Source: MDPH HIV/AIDS Surveillance Program, Data as of 7/1/03

- Exposure mode among females diagnosed with HIV infection within the three years 2000 – 2002 varies by race/ethnicity.
- While the predominant mode of exposure among White females diagnosed with HIV infection within 2000-2002 is injection drug use (38%), the predominant mode of exposure among Black females is presumed heterosexual sex (52%) and among Hispanic females is heterosexual sex (41%).

See Table A.19 in Appendix 1 for further detail.

Note: For interpretation of the category "presumed heterosexual," see note on page 17.

Table 4.8 People Diagnosed with HIV Infection by Health Service Region[1] and Gender: MA, 2000-2002[2]

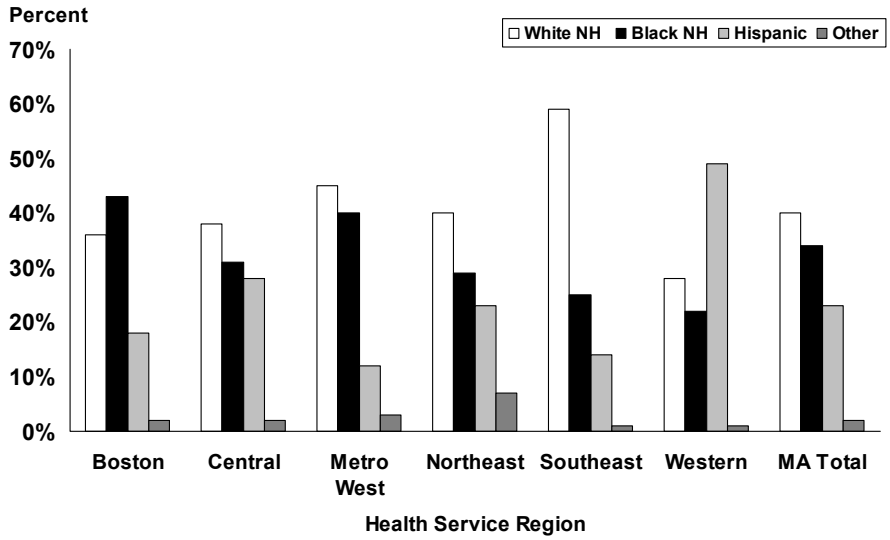
	Male		Female		Total
Health Service Region:	N	%	N	%	N
Boston HSR	718	74%	247	26%	**965**
Central HSR	141	65%	77	35%	**218**
Metro West HSR	246	67%	122	33%	**368**
Northeast HSR	278	65%	150	35%	**428**
Southeast HSR	298	67%	144	33%	**442**
Western HSR	236	66%	122	34%	**358**
Prisons[3]	130	82%	29	18%	**159**
MA Total	**2,047**	**70%**	**891**	**30%**	**2,938**

[1] Reflects the health service region of a person's residence at the time of report (not necessarily current residence)
[2] Reflects year of HIV diagnosis among all individuals reported with HIV infection, with or without an AIDS diagnosis
[3] HSRs are regions defined geographically to facilitate targeted health service planning. While prisons are not an HSR the prison population is presented separately in this analysis because of its unique service planning needs. Prisons include persons who were diagnosed with HIV/AIDS while in a correctional facility
Data Source: MDPH HIV/AIDS Surveillance Program (percentages may not add up to 100% due to rounding), Data as of 7/1/03

- The Boston region has the highest proportion of HIV infection in males within the three year period 2000-2002 at 74%.
- The gender distribution of the Central, Metro West, Northeast, Southeast and Western regions are very similar with the proportion of females ranging from 33% to 35% and the proportion of males ranging from 65% to 67%.

See Appendix 4 for maps of HSRs.

Figure 4.8 People Diagnosed with HIV Infection Within the Years 2000 - 2002 by Health Service Region and Race/Ethnicity: MA

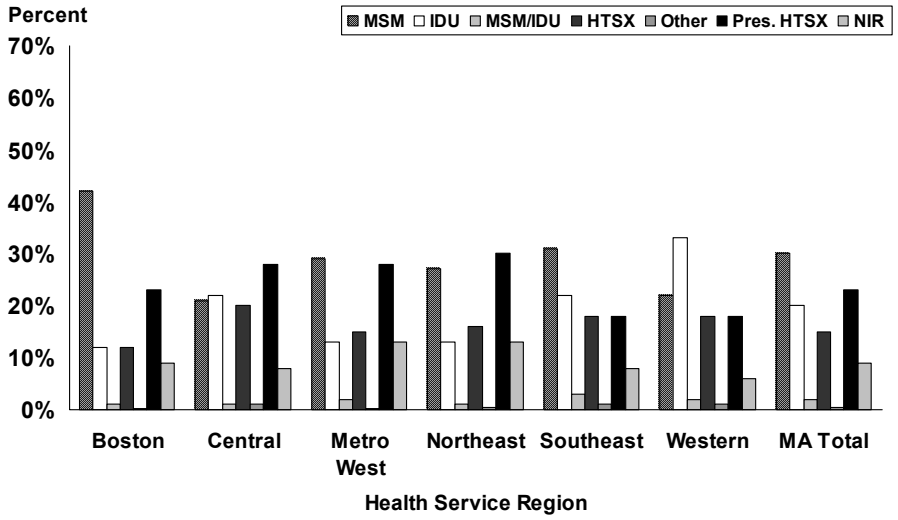


NH= Non-Hispanic; Data Source: MDPH HIV/AIDS Surveillance Program, Data as of 7/1/03

- Race/ethnicity among people diagnosed with HIV infection within the three year period 2000 – 2002 varies by Health Service Region (HSR).
- Whites account for the largest proportion of people diagnosed with HIV infection in the Metro West (45%), Central (38%), Northeast (40%), and Southeast (59%) regions.
- Blacks account for the largest proportion (43%) of people diagnosed with HIV infection in the Boston region and Hispanics account for the largest proportion (49%) in the Western region.

See Table A.20 in Appendix 1 for further detail.

Figure 4.9 People Diagnosed with HIV Infection Within the Years 2000 - 2002 by Health Service Region and Mode of Exposure: MA



Data Source: MDPH HIV/AIDS Surveillance Program, Data as of 7/1/03, "Other" exposure category is not represented here as it accounts for ≤1% of HIV diagnoses in all regions

- Exposure mode among people diagnosed with HIV infection within the three year period 2000 – 2002 varies by Health Service Region (HSR).
- Male-to-male sex is the primary mode of exposure for people diagnosed with HIV infection in the Boston (42%) and Southeast (31%) regions.
- Injection drug use is the primary mode of exposure for people diagnosed with HIV infection in the Western (33%) region.
- In the Northeast region, presumed heterosexual sex is the attributed exposure among the largest percentage of people diagnosed with HIV infection within the three year period 2000 – 2002 at 30%.

See Table A.21 in Appendix 1 for further detail.

Note: For interpretation of the category "presumed heterosexual," see note on page 17.

Section 3. Maternal characteristics of HIV positive women who gave birth to children in the Pediatric Spectrum of Disease (PSD) Project in 2001 and 2002 and characteristics of births through 2001.

The data included in this section are provided by the Massachusetts Pediatric Spectrum of Disease Project (PSD). PSD collects data for HIV-infected and perinatally exposed children whose mothers are known to be HIV positive. Improved prenatal HIV counseling and testing and expanded access to effective treatments have greatly increased the likelihood that women with HIV will deliver babies free of HIV. The profile that follows of HIV positive mothers enrolled in the PSD Project who gave birth to children from 2001-2002 in Massachusetts can help to target and inform programs designed to prevent the perinatal transmission of HIV. Additional data describing births to HIV positive women that are reported to PSD are included through 2001. Since the infection status of infants born to HIV positive mothers in 2002 is still unknown for many infants, these data are not included.

Table 4.9 Maternal Characteristics[1] of HIV Positive Women Known to Have Given Birth: MA[2], 2001 - 2002[3]

Mother's Risk:	N	%
Injection Drug Use	26	20%
Sex with a Male Injection Drug User	9	7%
Sex with a Male Living with HIV/AIDS	23	17%
Transfusion	2	1%
No Identified Risk	72	55%
Maternal Age:	**N**	**%**
<20	2	1%
20-34	90	68%
35+	29	22%
Unknown age at delivery	11	8%
Maternal Race/Ethnicity:	**N**	**%**
White Non-Hispanic	29	22%
Black Non-Hispanic	48	36%
Hispanic	46	35%
Other/Unknown	9	7%
Maternal Birthplace:	**N**	**%**
US	60	45%
US Dependency	15	11%
Non-US[4]	39	30%
Unknown	18	14%
Total (2 Years)	**132**	

[1] Data represents mothers of children with perinatal exposure to HIV only (not children exposed from other sources i.e. hemophilia, transfusion, etc.)
[2] Births in MA only
[3] Two years of data have been combined to provide a more stable distribution
[4] Includes Brazil, Cambodia, Cameroon, Cape Verde Island, Dominican Republic, Haiti, Honduras, El Salvador, Ghana, Guinea-Bissau, India, Kenya, Nigeria, Peru, Portugal, Somali Republic, South Africa, South Korea, Tanzania, Uganda, Zaire, and Zimbabwe
Data Source: Pediatric Spectrum of Disease (PSD), Data as of 7/1/2003

- Twenty-seven percent of women living with HIV infection known to have given birth in Massachusetts in 2001 and 2002 had an HIV risk related to injection drug use (injection drug use and sex with an injection drug user combined); 55% had no identified risk other than unprotected heterosexual contact.

- The largest proportions of women living with HIV infection who gave birth in Massachusetts in 2002 were Black at 36% and Hispanic at 35%.
- Forty-one percent of women living with HIV infection who gave birth were born either outside the US (30%) or in a US dependency (11%).

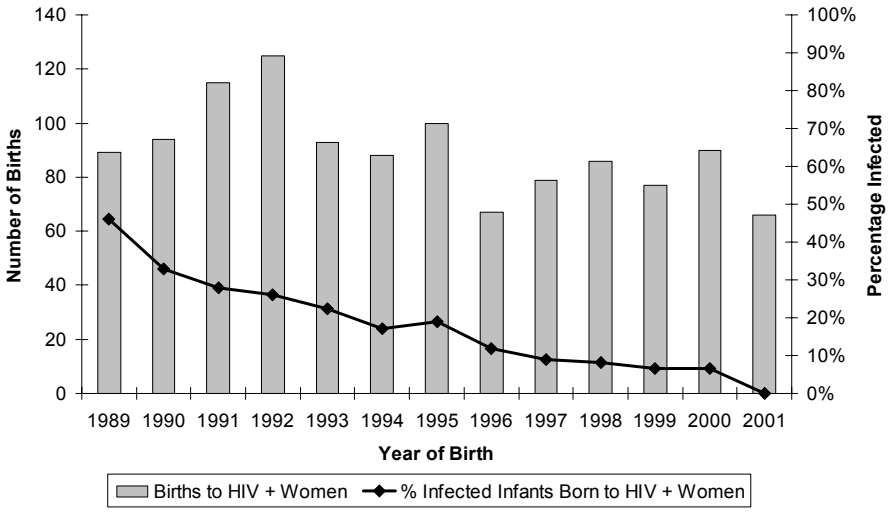
Table 4.10 Characteristics of Births to HIV Positive Mothers[1]: MA 1991,1996 and 2001

Year of Birth:	1991		1996		2001	
Total Number of Births to HIV-Infected Mothers:	115		67		66	
When Mother's HIV Infection was Diagnosed:	**N**	**%**	**N**	**%**	**N**	**%**
Before Child's Birth	89	77%	57	85%	65	98%
After Child's Birth	22	19%	10	15%	1	2%
Unknown	4	3%	0	0%	0	0%
Anti-Retroviral Therapy[2] for Mothers Diagnosed with HIV Infection Before Child's Birth:	**N**	**%**	**N=57**	**%**	**N=65**	**%**
Yes	-	-	51	89%	65	100%
No	-	-	6	11%	0	0%
Unknown	-	-	0	0%	0	0%
Mode of Delivery for Mothers Diagnosed with HIV Infection Before Child's Birth:	**N=89**	**%**	**N=57**	**%**	**N=65**	**%**
Caesarian Section	17	19%	9	16%	24	37%
Vaginal	66	74%	48	84%	40	62%
Unknown	6	7%	0	0%	1	2%
Infection Status of Child:	**N**	**%**	**N**	**%**	**N**	**%**
Infected	32	28%	8	12%	0%	0%
Not Infected	78	68%	55	82%	57	86%
Unknown	5	4%	4	6%	9	14%

1 Population includes only mothers of children with diagnosed HIV infection or exposure. MA births only
2 This includes any therapy during pregnancy and/or during labor and delivery. No numbers are reported for 1991 because the value of antiretroviral treatment during pregnancy was still under study at this time
Data Source: Pediatric Spectrum of Disease (PSD), Data as of 07/01/2003

- The percentage of HIV positive mothers who knew their HIV status before giving birth has increased from 77% in 1991 to 98% in 2001.
- Of women who knew their HIV positive status before giving birth in Massachusetts in 2001, 100% received antiretroviral therapy during pregnancy and/or during labor and delivery.
- The percentage of Caesarean section deliveries among Massachusetts births to known HIV positive mothers peaked in 1999 at 62% and decreased to 55% in 2000 (and to 37% in 2001, data not shown). This decline is consistent with recent changes in practice standards to assess on a case-by-case basis the risk versus benefit of performing a Caesarean section delivery.

Figure 4.10 Number of Births to HIV + Women and Percentage of Infected Infants: 1989-2001, MA



Data Source: Data from Pediatric Spectrum **of Disease Project as of 7/1/03, MA Births Only**

- The percentage of known HIV infection transmitted perinatally among mothers known to be HIV positive who gave birth in Massachusetts, has decreased markedly in the past ten years from 26% (N=32) in 1992 to 0% in 2001.

See Table A.22 in Appendix 1 for further detail

Section 4. Profile of people testing for HIV at publicly-funded sites

Program utilization data for HIV/AIDS prevention services describe people who utilize these services and who may be at risk for HIV infection. In particular, data from HIV testing programs can be used to describe demographics and HIV risk behavior in a population. The following tables contain data on clients utilizing state-funded counseling and testing sites. These settings include community health centers, hospitals, jails, and sexually transmitted disease clinics. An estimated 30% of people who get tested for HIV in Massachusetts get tested at one of these sites; therefore, these data are not representative of all people testing for HIV infection in Massachusetts. It is important to note that the data presented in this section represent tests performed and not individual clients; therefore the data may contain more than one test for some people.

Table 4.11 Number and Percent of Positive HIV Tests[1] by Gender, Race/Ethnicity, Age of Client and Risk Category: MA, 2002

HIV Tests by Gender of Client:	Total Tests	Total Positive Results	Percent Positive
Male	28,732	439	1.5%
Female	18,485	188	1.0%
Unknown[2]	443	12	2.7%
HIV Tests by Race/Ethnicity of Client:	**Total Tests**	**Total Positive Results**	**Percent Positive**
White	21,114	155	0.7%
African-American	8,065	182	2.3%
Latino	12,166	210	1.7%
Asian/Asian-American	1,006	7	0.7%
American Indian/Aleutian/Eskimo	172	3	1.7%
Haitian	892	21	2.4%
Brazilian	1,019	16	1.6%
Portuguese	717	5	0.7%
Cape Verdean	685	16	2.3%
Other	1,087	13	1.2%
Unknown[2]	737	11	1.5%
HIV Tests by Age of Client, in Years:	**Total Tests**	**Total Positive Results**	**Percent Positive**
Under 13	63	1	1.6%
13 to 19	3,811	3	0.1%
20 to 24	10,716	44	0.4%
25 to 29	8,361	81	1.0%
30 to 34	7,016	119	1.7%
35 to 39	6,147	149	2.4%
40 to 44	4,830	103	2.1%
45 to 49	2,970	74	2.5%
50+	2,944	47	1.6%
Unknown[2]	802	18	2.2%
HIV Tests by Risk Category[3]:	**Total Tests**	**Total Positive Results**	**Percent Positive**
Male-to-male sex (MSM)	2,562	89	3.5%
MSM/IDU	129	1	0.8%
Injecting Drug User (IDU)	3,607	55	1.5%
Heterosexual Sex (HTSX)	14,953	146	1.0%
Other/No Identified Risk	26,409	348	1.3%
Total	**47,660**	**639**	**1.3%**

[1] Tests performed at publicly funded HIV counseling and testing sites. (People also test for HIV at non-publicly funded sites for whom data are not represented in this table); [2] Unknown indicates that the data were missing or unreadable [3] Data collected on possible exposure on the C&T report form were aggregated using the CDC risk hierarchy in order to make these data more comparable to the HIV/AIDS case data. Data Source: MDPH HIV/AIDS Bureau HIV Counseling and Testing Program. Data as of 7/1/03

- In 2002, more HIV tests were performed among males (60%, N=28,732) than females (39%, N=18,485) at publicly-funded counseling and testing (C&T) sites.
- The majority of HIV tests were given to White non-Hispanic (44%, N=21,114) followed by Latinos (26%, N=12,166) and African-Americans (17%, N=8,065).
- The percent of total HIV tests that were positive was higher among males (1.5%) than females (1.0%) in 2002. (For males, the percent of positive HIV tests has declined from 4% in 1992; for females, the percent of positive HIV tests has declined from 2% in 1992. Data not shown.)
- While people ages 20-24 (22%, N=10,716) account for the largest number of total tests across age categories, the percent of positive tests among this age group is very low (0.4%).
- While the number of total tests among people ages 45-49 (6%, N=2,970) is low, the percent of positive tests is the highest across age categories (2.5%).
- The highest percentage of positive HIV tests was among clients reporting male-to-male sex as their risk (3.5%) followed by injection drug use (1.5%).

Section 5. Behavioral Risk for HIV Infection

The following tables include behavioral data about number of sexual partners and condom use as reported by Massachusetts residents through anonymous telephone interviews in 2002. This ongoing random-digit-dial telephone survey, the Behavioral Risk Factor Surveillance Survey (BRFSS), covers a broad range of topic areas (including sexually-related risk) and is part of a CDC-funded national survey program.

Sex with multiple partners has historically been correlated with other predictors of HIV transmission. Reducing numbers of sexual partners has been an HIV/STD prevention intervention goal as has increasing condom use. Data regarding the prevalence of each of these behaviors follows.

Table 4.12 Number of Sexual Partners in Past Year[1] among Adults Ages 18-64 Years: MA, 2002

	0 Partners	1 Partner	2 + Partners	N[2]
Total:	17%	75%	7%	2,498
Age in Years:	**0 Partners**	**1 Partner**	**2 + Partners**	**N**
18-24	20%	60%	19%	249
25-34	9%	82%	9%	594
35-44	12%	82%	6%	677
45-64	25%	72%	2%	978
Sex:	**0 Partners**	**1 Partner**	**2 + Partners**	**N**
Male	15%	75%	9%	1,110
Female	20%	75%	5%	1,388
Race/Ethnicity:	**0 Partners**	**1 Partner**	**2 + Partners**	**N**
White NH	16%	76%	7%	1,995
Black NH	23%	71%	6%	121
Hispanic	17%	72%	11%	248
Asian	31%	65%	4%	76

NH= Non-Hispanic
[1] "Number of sexual partners in past year" is a state-added question administered to a sub-sample of BRFSS respondents.
[2] Only respondents with known values are included in this table. Column sub-totals may not equal overall total due to missing values.
Data Source: Massachusetts Behavioral Risk Factor Surveillance System (BRFSS), 2002

- Among 2,498 respondents to the 2002 Massachusetts BRFSS, 7% reported two or more partners, 75% reported one partner, and 17% reported no sexual partners in the past year.
- The largest proportions of people reporting two or more partners were young (19% of 18-24 year olds reported two or more partners), were men (9% of men reported two or more partners compared to 5% of women), and were Hispanic (11%).

Table 4.13 Number of Sexual Partners in the Past Year[1], *Males* Ages 18-64: MA, 2002

	0 Partners	1 Partner	2+ Partners	N[2]
Total Males	15%	75%	9%	1,110
Age in Years:	**0 Partners**	**1 Partner**	**2+ Partners**	**N**
18-24	19%	55%	26%	101
25-34	13%	78%	9%	273
35-44	10%	82%	8%	291
45-64	20%	76%	4%	445
Race/Ethnicity:	**0 Partners**	**1 Partner**	**2+ Partners**	**N**
White NH	15%	76%	10%	912
Black NH	15%	78%	7%	49
Hispanic	12%	77%	11%	85
Asian	30%	65%	4%	42
Sex of Partner[3]:	**0 Partners**	**1 Partner**	**2+ Partners**	**N**
Same Sex	N/A	49%	51%	49
Opposite Sex	N/A	91%	9%	856

NH= Non-Hispanic
[1] "Number of sexual partners in past year" is a state-added question administered to a sub-sample of BRFSS respondents.
[2] Only respondents with known values are included in this table. Column sub-totals may not equal overall total due to missing values.
[3] Only asked of sexually active adults
Data source: Massachusetts Behavioral Risk Factor Surveillance System (BRFSS), 2002

- Twenty-six percent of males ages 18-24 reported two or more sexual partners compared to 9% of males ages 25-34, 8% of males ages 35-44, and 4% of males ages 45-64.
- Fifty-one percent of males with a same sex partner reported two or more sexual partners compared to 9% of males with an opposite sex partner.

Table 4.14 Number of Sexual Partners in the Past Year[1], *Females* Ages 18-64 MA, 2002

	0 Partners	1 Partner	2+ Partners	N[2]
Total Females	20%	75%	5%	1,388
Age in Years:	**0 Partners**	**1 Partner**	**2+ Partners**	**N**
18-24	22%	65%	13%	148
25-34	6%	86%	9%	321
35-44	14%	82%	4%	386
45-64	31%	68%	1%	533
Race/Ethnicity:	**0 Partners**	**1 Partner**	**2+ Partners**	**N**
White NH	18%	77%	5%	1083
Black NH	32%	64%	4%	72
Hispanic	20%	68%	11%	163
Asian	31%	65%	4%	34
Sex of Partner[3]:	**0 Partners**	**1 Partner**	**2+ Partners**	**N**
Same sex	N/A	94%	6%	26
Opposite sex	N/A	94%	6%	1023

NH= Non-Hispanic
[1] "Number of sexual partners in past year" is a state-added question administered to a sub-sample of BRFSS respondents.
[2] Only respondents with known values are included in this table. Column sub-totals may not equal overall total due to missing values.
[3] Only asked of sexually active adults
Data source: Massachusetts Behavioral Risk Factor Surveillance System (BRFSS), 2002

- Thirteen percent of females ages 18-24 reported two or more sexual partners compared to 9% of females ages 25-34, 4% of females ages 35-44, and 1% of females ages 45-64.
- Eleven percent of Hispanic females reported two or more sexual partners compared with 5% of White females and 4% of both Black and Asian females.

Table 4.15 Condom Use At Last Sexual Encounter, Adults Ages 18-64[1]: MA, 2002

	% Used Condom	Total N[2]
Total:	24%	1,985
Sex:	**% Used Condom**	**Total N**
Male	26%	926
Female	22%	1,059
Race/Ethnicity:	**% Used Condom**	**Total N**
White NH	22%	1,606
Black NH	20%	86
Hispanic	33%	194
Asian	43%	53
Other	31%	33
Number of Partners:	**% Used Condom**	**Total N**
0	34%	24
1	21%	1,765
2	49%	113
3+	54%	83
Sex of Partner:	**% Used Condom**	**Total N**
Same Sex – Male	40%	53
Opposite Sex – Male	25%	866
Same Sex – Female	2%	27
Opposite Sex – Female	22%	1,028

NH= Non-Hispanic
[1] Only asked of sexually active adults
[2] Only respondents with known values are included in this table. Column sub-totals may not equal overall total due to missing values.
Data Source: Massachusetts Behavioral Risk Factor Surveillance System (BRFSS), 2002

- Of 1985 sexually active respondents to the BRFSS ages 18-64, 24% reported using a condom at last sexual encounter (26% of male respondents and 22% of female respondents).
- Forty-three percent of Asians and 33% of Hispanics reported condom use at last sexual encounter as opposed to 22% of Whites and 20% of Blacks.
- Regarding sex with multiple partners, 54% of those reporting 3 or more partners also reported condom use at last sex.
- Of men reporting a same-sex partner, 40% reported condom use at last sex, while 25% of men with opposite-sex partners reported condom use at last sex.

Table 4.17 Ever Tested for HIV, Adults Age 18-64: MA, 1993 – 2002

Year:	Total N[1]	% Ever Tested for HIV
1993	1,530	27%
1994	2,709	30%
1995	2,758	37%
1996	2,504	39%
1997	3,035	46%
1998	3,995	42%
1999	6,128	46%
2000	6,804	48%
2001	7,113	47%
2002	5,618	47%

[1] This question was one of the core federal questions posed to all respondents to the annual BRFSS between the ages of 18-64. Respondents with missing values for this item were not included in this table.
Data Source: Massachusetts Behavioral Risk Factor Surveillance System (BRFSS), 1993-2002

- From 1993 to 1997 the percentage of adults ever tested for HIV increased from 27% to 46%.
- The percentage of adults ever tested for HIV has not changed significantly in the past three years (2000-2002).

Table 4.18 Ever Tested for HIV by Number of Sexual Partners in Past Year[1], Adults Age 18-64: MA, 2002

	Total N[2]	% Ever Tested for HIV
Total:	2,980	48%
Number of Partners:	**Total N**	**% Ever Tested for HIV**
0	519	35%
1	1,722	51%
2	111	58%
3+	82	70%

[1] "Number of sexual partners in past year" is a state-added question administered to a sub-sample of BRFSS respondents.
[2] Total number of participants that responded to both number of sexual partners and ever tested for HIV.
Data Source: Massachusetts Behavioral Risk Factor Surveillance System (BRFSS), 2002

- Of 2,980 respondents to the 2002 BRFSS ages 18-64, 48% reported ever being tested for HIV infection.
- Thirty-five percent of respondents who reported no sexual partners in the past year were ever tested for HIV, compared to 51% of respondents reporting one partner, 58% reporting two partners, and 70% reporting three or more partners.

Section 6. Trends in Sexually Transmitted Diseases (STDs)

It has been found that the presence of an STD may facilitate HIV transmission. Thus, early detection and treatment of STDs can have an impact on preventing sexual transmission of HIV. The following tables contain data on Chlamydia, Gonorrhea, and Syphilis which are three sexually transmitted diseases that are reported to the state. Rates of STDs can be used as an indicator of unprotected sex as well as other factors such as access to health care and prevention services.

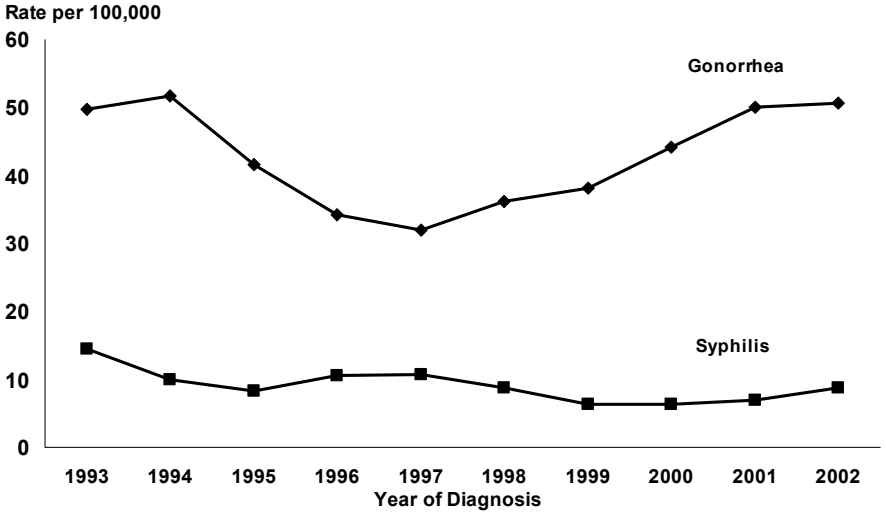
Table 4.18 Number and Rate per 100,000 Population of Chlamydia Cases by Year of Diagnosis: MA, 1993 – 2002

Year:	Number of Cases	Rate per 100,000
1993	7,988	131.7
1994	8,111	132.8
1995	7,155	116.5
1996	6,707	108.5
1997	7,151	114.8
1998	8,203	130.4
1999	8,730	137.9
2000	10,066	158.5
2001	10,216	160.9
2002	11,019	173.6

Data Source: MDPH Division of STD Prevention and Control; Data as of 7/1/03

- From 1993 to 2002, the number of reported Chlamydia infections increased by 38%.
- Increases in reported Chlamydia infection between 1996 and 2002 are, in great part, due to increases in screening of asymptomatic individuals and new, more sensitive testing methodologies.

Figure 4.11 Rates of Syphilis and Gonorrhea per 100,000 Population by Year of Diagnosis: MA, 1993-2002



Data Source: MDPH Division of STD Prevention; Data as of 7/1/2003

Table 4.19 Number and Rate per 100,000 Population of Gonorrhea Cases by Year of Diagnosis: MA, 1993 – 2002

Year:	Number of Cases	Rate per 100,000
1993	3,011	49.7
1994	3,155	51.7
1995	2,555	41.6
1996	2,116	34.2
1997	1,992	32.0
1998	2,277	36.2
1999	2,419	38.2
2000	2,803	44.1
2001	3,181	50.1
2002	3,222	50.7

Data Source: MDPH Division of STD Prevention and Control; Data as of 7/1/03

- The number of reported gonorrhea cases decreased by 34% from 1993 to 1997 and then increased by 62% from 1997 to 2002.
- In 2002, there were 50.7 cases of gonorrhea reported for every 100,000 people in Massachusetts.

Table 4.20 Number and Rate per 100,000 Population of Syphilis Cases by Year of Diagnosis: MA, 1993 – 2002

Year:	Number of Cases	Rate per 100,000
1993	873	14.4
1994	603	9.9
1995	511	8.3
1996	650	10.5
1997	664	10.7
1998	555	8.8
1999	397	6.3
2000	409	6.4
2001	440	6.9
2002	558	8.8

Data Source: MDPH Division of STD Prevention and Control; Data as of 7/1/03

- The number of annual syphilis cases has fluctuated over the past ten years.
- After declining by 40% from 1997 to 1999, the number of syphilis cases increased by 36% from 2000 to 2002.

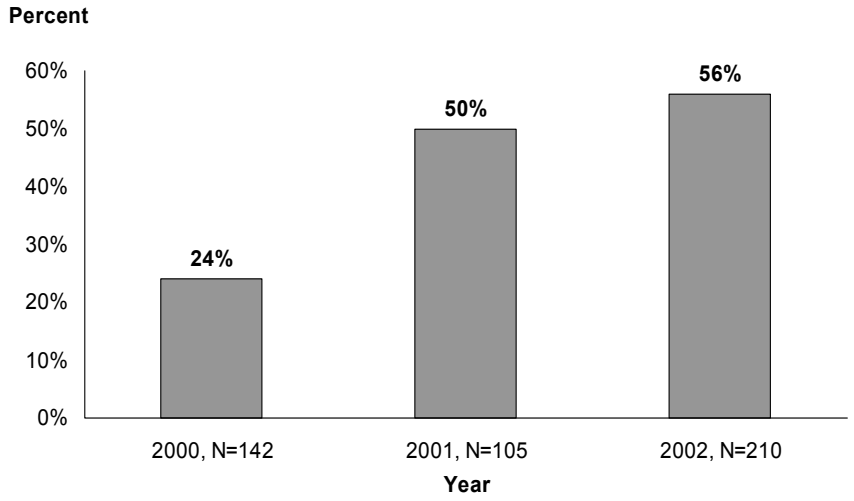
Table 4.21 Number of Syphilis Cases by Gender and Year of Diagnosis: MA, 1993 – 2002

	Male		Female		
Year:	N	%	N	%	Total
1993	485	56%	388	44%	873
1994	331	55%	272	45%	603
1995	300	59%	211	41%	511
1996	369	57%	281	43%	650
1997	395	59%	269	41%	664
1998	319	57%	236	43%	555
1999	244	61%	153	39%	397
2000	252	62%	157	38%	409
2001	258	59%	182	41%	440
2002	381	68%	177	32%	558

Data Source: MDPH Division of STD Prevention and Control; Data as of 7/1/03

- After fluctuating between 57% and 62% from 1995 - 2001, the proportion of syphilis cases among males increased to 68% in 2002.

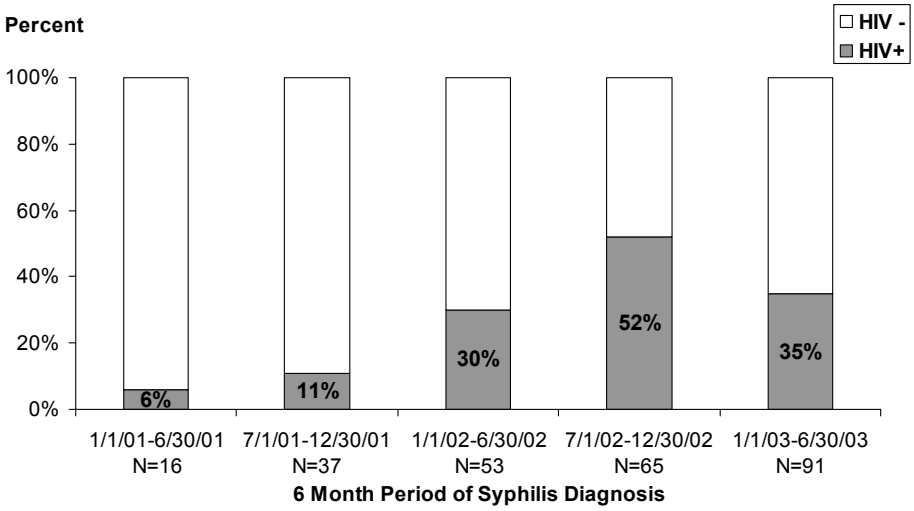
Figure 4.12 Proportion of Infectious Syphilis Cases Among Men Who Have Sex with Men by Year of Diagnosis: MA 2000-2002



Data Source: MDPH Division of STD Prevention

- The proportion of total infectious syphilis cases reported that were among MSM increased from 24% in 2000 to 56% in 2002.

Figure 4.13 Infectious Syphilis Cases Among Men Who Have Sex with Men by HIV Status and 6 Month Period of Diagnosis: MA, 1/1/01 – 7/1/03



Data Source: MDPH Division of STD Prevention, Data as of 7/1/03

- In the first 6 months of 2001 (January 1, 2001 to June 30, 2001) there were 16 cases of infectious syphilis reported among men who have sex with men. Of the 16 cases, 6% were also HIV positive and 94% were HIV negative at the time of report.
- From the first 6 months of 2001 to the last 6 months of 2002 the proportion of infectious syphilis cases among men who have sex with men that were HIV positive rose from 6% to 52%. In the first 6 months of 2003, the proportion of infectious syphilis cases among MSM that were HIV positive dropped to 35%.